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ABSTRACT

At Raymond Walters College (RWC), a two-year branch of the University of Cincinnati, the concept of developing linkages with business and industry began in 1983 with the creation of a new administrative office of Educational Services and a new community advisory board, the RWC Work and Learning Council. Though RWC provides noncredit training in a variety of areas for several companies in its service area, the most important linkage that the college has developed is a master contract between the Educational Services Office and the General Electric (GE) Aircraft Engine Business Group. The blanket contract provides an umbrella agreement under which the signatories can develop specific educational services. These services include: (1) special noncredit training on RWC's computer to GE employees; (2) a comprehensive After Hours noncredit training program featuring classes in cardiopulmonary resuscitation, materials and processes for jet engines, blueprint reading, and professional engineer's review; and (3) a two-year associate degree program in manufacturing engineering technology, which offers such advantages as external testing, assessment, and academic advising; college study skills seminars; credit for prior college and work experience; utilization of the company's tuition refund program; confidentiality; credentialing; accountability; low cost; convenient locations; and resources of four colleges of the University of Cincinnati. The success of the contract agreement between GE and RWC is the result of the adaptability, creativity, and pragmatism of the leaders of both institutions who have collaborated to mesh company needs and college resources. (EJV)

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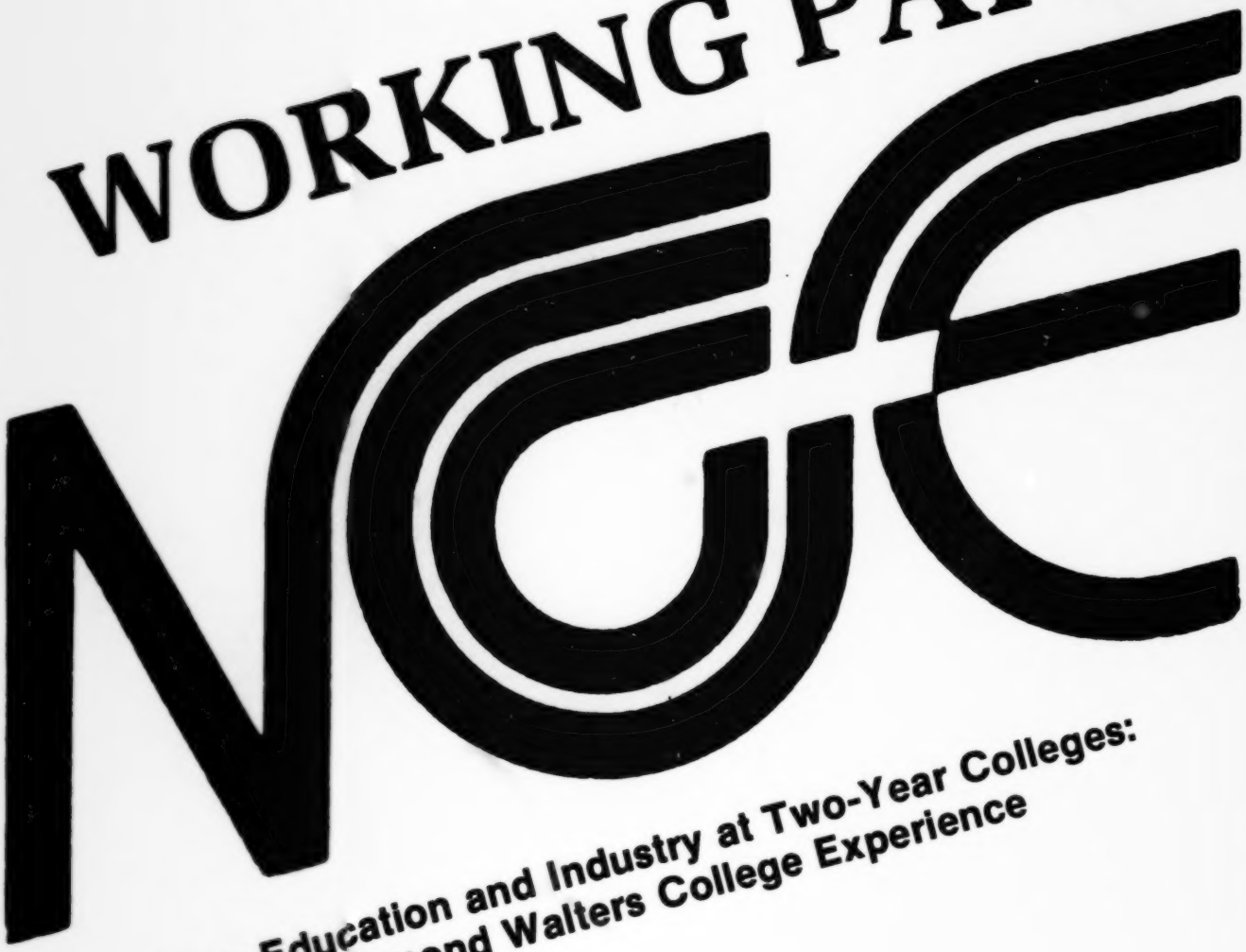

Linking Education and Industry at Two-Year Colleges: the Raymond Walters College Experience

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Editor's Introduction:

The Working Papers Series provides practitioners with ideas and information about programs and processes which they may adapt to their own needs. Some papers describe services developed at a single institution which illustrate one educational approach to meeting a particular need. Others describe networks which jointly provide educational services. Some papers deal primarily with the implementation of an educational program; others dea with ways of successfully administering an educational unit.

We would like to hear from anyone who has applied an idea discussed in a Working Paper. Perhaps we can add a "Follow-up" section for comments from those who have adapted programs or procedures presented here. It is possible, and a fond hope of the editor, that such an experience could lead to the production of another Working Paper which would, among other things, illustrate how an activity can be identified in the professional literature and tailored to a different institution's purpose.

New Working Papers are always being sought. Writers should send a concept paper or letter of a page or two which clearly describes the projected contents and purpose of the Working Paper. The editor is happy to work with writers who want to share an accomplishment. Despite the challenge of adding another task to their busy schedules, most *Working Papers* writers have found the production and publication of their work to be highly satisfying and fulfilling.

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Linking Education and Industry at Two-Year Colleges: The Raymond Walters College Experience

Harriette Flory, Ph.D.

> Recognizing not only the urge but the need to form partnerships both higher education and industry are keeping "an eye out for partners." (Matthews & Norgaard, 1984, p. 1)

In the past decade, many educational institutions across the nation have sought to develop linkages with the business and industry community. Among the leaders in these relationships are two-year colleges. From the perspective of these institutions, several factors provide the incentive to nurture such relationships. For one, these linkages provide an important source of new, adult students in the wake of the decline of the traditional 18-year-old cohort. Moreover, although the current enrollment trough facing the nation's colleges and universities will begin to end in 1994, the explosion of knowledge in advanced industrial societies has created a permanent need for lifelong learning. Hence, the mission of two-year colleges in the United States will continue to include an important adult education component, even after the increase in the number of traditional college-age students begins around 1994. Beyond meeting the need for a new source of students, partnerships between colleges and industry provide new, different, and stimulating experiences for faculty, whose mobility between institutions is severely restricted by the surplus of teaching faculty in most fields. Working with industrial leaders and employed adult students creates new demands for faculty training and preparation and provides reassurance traditional faculty that they do indeed cope well in the "real world" of industry. Finally, linkages with business and industry enable two-year colleges to play an important socioeconomic role in the revitalization of American industry.

From the perspective of industry, the competition from abroad has brought an urgency to the efforts to develop a trained work force. Many American industries have instituted human resource development offices and extensive in-house training programs for their employees. Some have established their own corporate colleges, offering baccalaureate and advanced degrees. In fact, American businesses annually spend about $40 billion in training and educational programs, nearly the same amount spent by the nation's higher education institutions. Of the approximately 65 million participants in postsecondary education in the

United States, only about 28% are enrolled in colleges and universities. In addition to their own programs, most industries continue to offer tuition remission programs to fund college course work; but of the American workers eligible, only about 4% utilize this opportunity.

Clearly education and training have become essential to the business world. Increasingly, industries perceive the need for, and the expediency of, developing training and educational programs with colleges and universities. One advantage to this linkage is the provision of credentials, in the form of college credits and degrees, which few industries can offer. Another is that employees often prefer the relative prestige associated with attending college courses rather than in-house programs. Physical environments is also a factor; colleges usually provide a setting more conducive to educational activities. Perhaps the most important advantage is that colleges can offer courses, laboratories, and equipment that many industries cannot. Increasingly these advantages of linkages are becoming apparent to all.

Development of linkages has acquired a high priority in Ohio. As part of the Strategic Plan developed in 1984 under the leadership of Governor Richard Celeste, the state has made a commitment to provide technical training assistance to small businesses, to implement job training in cooperation with educational institutions through the JTPA (Job Training Partnership Act) programs and the vocational-technical consortium, to enhance technology transfer through the creation of Advanced Technology Centers, and to develop other initiatives for the enhancement of the state's human resources (State, 1985). As a part of that thrust, the chancellor of the Ohio Board of Regents, William Coulter (personal communication, August 12, 1985), has proposed that Ohio's " . . . two-year campuses be the first point of contact for all adult programs offered to workers and to business and industry in their communities" (p. 4). As he notes:

> Ohio's two-year colleges are geographically and programmatically suited for a leadership role in meeting economic and human resource development needs of their local communities. They are precisely at the intersection of the needs of adults and the companies relative to economic revitalization. (p. 5)

At Raymond Walters College (RWC), a two-year branch of the University of Cincinnati, the concept of developing linkages with business and industry began in 1983 with the creation of a new administrative office, Educational Services, headed by an assistant dean. Primary responsibilities of the position include the development of cooperative relationships with area industry and identification of faculty with special interests and expertise to provide training programs for adults. The college's service area encompasses a population of over 250,000, covering portions of four counties, residential and industrial, urban, suburban, and rural. In most ways, Raymond Walters College is ideally situated for this function because it is located in the Cincinnati suburb of Blue Ash, about 15 miles from the central campus. Blue Ash is a rapidly growing residential and industrial community; in fact, there are currently more busineses in Blue Ash than in the city of Cincinnati. Most of the newer industries in the area are service-related or light manufacturing, fitting well with the college's emphasis on programs related to the liberal arts rather than to heavy engineering industrial technology.

An important component of RWC's plan to increase linkages within its service area was the creation of a new community advisory board for the college to replace a nearly defunct board. The RWC Work and Learning Council, recruited in the autumn of 1983, is composed of about 40 members at large from the community and 25 college representatives, including department chairpersons, representatives from program advisory committees, the dean, the admissions officer, and the chairperson of the Long-Range Planning Committee. The Council is divided into five subgroups: allied health professionals, educational leaders, personnel directors, chief executive officers, and community leaders. The large group meets one or two times a year; each of the small groups meets more frequently to discuss issues related to the specific interests of the group. The tactic of subdividing a large council into smaller interest groups has been a very effective device, for it provides a meaningful agenda—specific goals, objectives, and projects for each subgroup. In its brief existence the Council already has had an impact on the college, for example, in the decision to design a new logo, to modify advertising to project a specific college image, to develop a concert series at the college in collaboration with the University College Conservatory of Music, to make the college library a repository for local history, to improve articulation with feeder high schools, and to analyze employment and training needs of area employers.

The primary function of the Office of

Educational Services (OES) is to develop linkages with area business and industry. Like most two-year institutions, the college offers noncredit training in a wide variety of areas for several companies in the college service area. These include basic math skills, problem solving and decision making, business and technical writing, effective communications, DEC VAX and IBM personal computer training, finance for nonfinancial managers, conflict resolution, and French for business people. About 25 of the College's 100 faculty members have been involved in these training courses, creating a pool of interested and experienced faculty from which to draw. That they have been successful in adapting to a new audience is apparent by the results of the students' teaching evaluations administered at the completion of each course.

But the most important linkage that the college has developed is a master contract between the Educational Services Office and the General Electric Aircraft Engine Business Group (GE AEBG), which is located about five miles from the campus. This blanket contract, developed in the summer of 1984, provides an umbrella agreement under which the signatories can develop specific educational services. This agreement embodies the view of John Matthews and Ray Nargaard (1984) that "community colleges can be especialy effective partners for industry precisely because they operate on the local level. They are willing to respond to community needs and have the flexibility to tailor programs to a changing environment" (p. 103).

The partnership between Raymond Walters College and GE AEBG has grown rapidly in the past two years and has involved three different kinds of relationships, each more extensive than the previous one. The first important agreement provided for RWC to deliver special noncredit training on the college's VAX 11/780 to GE employees, including VAX Commands and Utilities, Fortran, and Systems Management-three- to five-day intensive hands-on seminars. All told, 23 of these sessions have been offered by RWC computer faculty members, with a total enrollment of over 400 GE employees. From the beginning, the OES administered student teaching evaluations for every seminar, in the absence of the instructor. This level of accountability is risky but is an important component of industrial training. The overall high results—an average of nearly 5 on a 6-point rating scale—established the credibility of the instructors and enhanced the developing relationship with GE. The College continues to offer VAX training on an as-needed basis.

The second signficant partnership between RWC and GE began in the autumn of 1984 in connection with GE's After Hours program. As one of its responsibilities, the Human Resource Development Office (HRD) of GE administers a comprehensive After Hours noncredit training program for its employees—more than 50 courses are attended by about 1,500 employees each semester. These courses include several computer courses as well as such diverse classes as cardiopulminary resuscitation, materials and processes for jet engines, blueprint reading, and professional engineer's review. Operating within the college/GE contract, GE transferred the day-to-day administration of the program to an administrative assistant located at the College, who reports to the Assistant Dean of Educational Services and is on the university payroll, but has her salary and expenses reimbursed to the college by GE. In addition, 30-35 of these classes meet each semester at the college, rather than at the plant, as was previously the case. The remaining courses, which involve heavy equipment, continue to be taught at the plant or, in the case of some computer classes, at a local vocational school that has more personal computers. Most classes are taught by GE employees with special expertise; several are staffed by RWC faculty, including four levels of French for business people, technical and business writing, and the Kepner-Tregoe (K-T) Decision Making/Problem Solving program. In the case of K-T, GE underwrote the considerable expense involved in the K-T training and certification program for an RWC faculty member. In addition to reimbursing RWC for the program administrator's salary, supplies, phone, and space rental, GE pays the college for RWC instruction, parking, and space rental and a facilitation (overhead) fee to underwrite Educational Services administrative costs.

One of the services provided by the OES is course evaluations, which involves having student evaluation administered in every course, always in the absence of the instructor. These forms are computer tabulated, and the results, along with written comments, are submitted to GE HRD in summary form only, with any OES recommendations regarding overall quality of instruction attached. This process provides a level of objectivity that is beneficial to HRD and to the instructors. When needed, special instructor refresher sessions are offered in conjunction with the university's College of Education.

The relationship thus developed between GE HRD and OES is beneficial to both GE and to the College. From GE's perspective, the arrangement

provides needed classroom space and audio-visual and library services. It also provides GE employees a change of scenery—from a hectic multi-building factory complex employing 18,000 to the college's scenic and quiet 100-acre campus. The five miles that separate GE and RWC are short in driving time, but removed in physical environment. Most employees and GE instructors see added prestige in meeting on a college campus. Moreover, these various services the College provides are offered at a reasonable cost.

This arrangement is beneficial to the College in several ways. The classes take up otherwise unoccupied classroom and parking space, for they meet in the 4:30-6:30 p.m. time slot when no regular college classes are scheduled, thereby maximizing the use of college space and facilities. They also provide new challenges and interests for RWC faculty who teach in the program. One English professor last summer conducted a needs assessment survey among GE managers to determine business and technical writing needs, redesigned GE's noncredit offerings on the basis of that study, and is now teaching courses in the After Hours program. He also offers at GE, on an as-needed basis, one-day seminars on technical and business writing. In the process, he has developed his own expertise in this field and recently offered a 10-hour seminar in writing for another area business, under the auspices of the OES. Besides the extra money, he has been revitalized by this new challenge and new contacts. As he describes his experience:

> I see a number of benefits arising out of the new linkages being formed between academia and business. For me, developing and teaching specialized writing courses designed to meet on-the-job needs has provided me with a significant new challenge. And challenge, after all, is what is too often missing for experienced faculty. I thrive on taking some risks, and I have always wondered if I had anything to offer the "real" business world. I have been pleased to discover that I can adapt to that world, that I can go inside an organization, determine what needs to be done to improve written communications, and that I can provide my "students" with useful examples drawn from their own business environment as models for improvement. For a change, I freely admit to finding pleasure in utility and relevance. Of course, I have also drawn upon my experience in business to enrich the traditional academic courses I teach, so there is a positive flow of new ideas and information that I can bring back to the traditional classroom. For me, the combination of traditional teaching and the teaching I do for business and industry has resulted in a highly desirable synergy.

The four-level French instruction has also been highly successful, enrolling over 80 students each semester. These courses emphasize oral French skills. The RWC faculty have maintained high expectations, and they are evaluated very highly by their students, most of whom either travel frequently to France on GE business or work closely with French subcontractors.

Yet another advantage to the College in this relationship is the indirect marketing to family and friends provided by these 600 employees who visit the campus weekly. Already the number of GE employees enrolled in credit classes at the College has increased and will undoubtedly continue to do so. More difficult to determine, but just as likely, these employees' relatives and friends hear about the College. There have been doubting Thomases at GE and RWC—some employees and a few GE instructors were initially reluctant to make the drive to campus. Nearly all have become supporters. In fact, enrollment in these courses has increased slightly compared to enrollment when all classes were in-plant.

A few critics at the College still fear too close relationships with external organizations; but in general, the program has worked well. The Assistant Dean of Educational Services has a close, informal relationship with the five people in GE HRD connected with the program. In fact, the single most important by-product of the After Hours program has been the development of trust and mutual respect between the two organizations that has made possible the latest partnership between GE and RWC, the development of a Manufacturing Engineering Technology program (METP).

The origins of the Manufacturing Engineering Technology two-year associate degree program lay in GE's dissatisfaction with its in-house two-year noncredit program in Manufacturing Studies, designed to develop middle management skills. As the result of extensive deliberations by a GE Work Effectiveness Committee in conjunction with a staff person from HRD, the decision was made to seek assistance from two-year colleges in the development of an associate degree program in

manufacturing engineering technology to meet the industry's changing needs. As the plant's chief manufacturing engineer, Ralph E. Patsfall, expressed GE's perceived need:

> As we move toward the factory of the future, more and more manufacturing operations and processes will be brought under computer control. As they become controlled, they will be linked together to form a net of interconnecting network subsystems—accessible when needed—enabling our people to plan, organize, decide, and control based on real-time information. At the same time, there will be parallel development and innovations in material and processes science which must be integrated into our computer-controlled system and linked into the overall manufacturing network. This new program of studies is at the cutting edge of technology—focusing on the basic principles needed to give the foundation (to enable workers) to stay abreast of the evolving factory of the future.

Within a four-month period, from May to September 1985, GE Human Resource Development Office's Pat Sommerkamp developed with representatives of three two-year colleges of the University of Cincinnati a joint program proposal in Manufacturing Engineering Technology. The needs of future employees were summarized in the Business-Higher Education Forum report to President Reagan:

> To function effectively in the work place, future workers must be literate, educated, and creative in addition to being skilled. Because jobs involving repetitive tasks will be performed more efficiently by flexible automation than by humans, people will need the following abilities: to communicate; to acquire and integrate information; to perform a variety of tasks; and to manage non-routine situations.

The program that was constructed provides employees with the broad-based education to develop conceptual and creative abilities as well as advanced technical skills. The program content includes:

1. General education core courses that develop the students' conceptual and critical thinking skills. John Naisbitt, in *Reinventing the Corporation,* describes these skills as the TLC of the new information society: learning how to think, learning how to learn, and learning how to create.

2. Technical and applied courses that enable the participants to learn the fundamental principles of manufacturing processes and operations, computer applications, processes and machine control systems, applied mechanics and materials, and technical design.

For students seeking a Bachelor's degree, the program can serve as the first two years of a four-year course of study leading to the Bachelor of Science (BS) degree in which the student can specialize in supervision, numerical control methods, or quality control planning. Students who already possess a baccalaureate degree in another field can receive the Professional Certificate, which encompasses one year of course work in technical and applied courses.

There are two aspects of the program unique to the University of Cincinnati experience. The first is the collaborative effort of the two-year colleges of the university in program development and delivery of instruction. Students enrolled in the program can take the general education courses or courses to make up deficiencies at all four two-year colleges within the University of Cincinnati system. Typical of the intercollege collaboration is the fact that this year the lecture course in Principles of Manufacturing is offered at RWC and taught by an Ohio College of Applied Science (OCAS) instructor for the convenience of employees. The lab component is taught in the facilities at OCAS. Most technical courses will be taught at OCAS, and OCAS will be the degree-granting institution. These METP students take their classes during evening hours, except for a few who are on second or third shift. They are encouraged to carry a six-credit hour load per quarter and will be required to maintain a B average in all of their course work. Those entering the program with no previous college work will be able to complete the Associate degree in four to five years, unless they have math or English deficiencies. Most students currently enrolled already have at least some applicable college or work experience credits, enabling them to complete the program more quickly even though they attend only at night.

In addition to offering the needed new skills and providing four convenient locations, the METP contains a crucial second unique component, developed and implemented in the GE pilot, the Packaged Learning Experience. In this package, the Raymond Walters College Office of Educational Services administers the program, which contains special services for all GE applicants. The OES receives all GE applications and administers English and mathematics placement tests in-plant. It then arranges in-plant private, one-on-one feedback sessions with each applicant who is (a) admitted

directly into the program, (b) placed in a pending category while he/she makes up English or math deficiencies, or (c) counseled out with recommendations to other training if test scores warrant it. Students accepted or conditionally accepted in the program are assigned an academic advisor who is available throughout the academic year and who meets with the individual employees before the beginning of each academic quarter for 30 minutes to advise and register them in the appropriate courses within the program. The advisors are also available during the evening throughout the academic quarter. There are currently four advisors in the program: one from RWC who chairs the committee of advisors, one from University College, and two from OCAS. For students whose study skills are rusty, the college offers a special study skills seminar of 4-8 hours that includes How to Read a Textbook, How to Write a Paragraph, How to Take Notes, and How to Prepare for Quizzes and Tests. Those applicants with previous college course work are given advanced standing credits. Those with work experience in the manufacturing area may receive academic credit for their related work experience.

The assessment testing and follow-up one-on-one feedback and advising make possible the placement of students at the appropriate academic levels. Test results for Autumn Quarter 1985 resulted in the placement of more than half of the applicants in remedial math courses. A measure of the current placement of these students is the fact that the Autumn Quarter grade point average of all students in the program was 3.1 on a 4-point scale. Moreover, a survey of the students in remedial programs indicated that the students themselves believe they have been placed at the proper academic level. At the end of each quarter the office of Educational Services administers evaluation forms in which each student has the opportunity to assess the quality of the course and instruction. These evaluations are tabulated by the OES and provided in summary form to the instructors and to appropriate company representatives. This process provides for accountability.

The Office of Educational Services processes the registration forms and matriculation forms within the university system and bills the company quarterly for the tuition, testing, advising, and administration of the program. The total cost is significantly lower than a comparable in-house program that does not at the same time offer college credits and degrees. From the company's perspective, this packaged learning is especially advantageous and cost effective. At the end of each academic quarter, the company is billed for tuition, books, and all special services, including the cost of testing, advising, and administration of the program; and the company payment is part of its tuition refund program. One bill for all students each quarter is cost effective, drastically reducing the company's paperwork for tuition refunds. To the company's advantage, the cash flow of the tuition refund program remains the same, for tuition refund programs traditionally reimburse individual students after the course has been completed.

The GE Work Effectiveness Committee continues to meet on at least a quarterly basis with college officials responsible for the program to receive enrollment updates and other statistical material and to discuss any current concerns regarding any facet of the program. In addition, the OES develops quarterly reports to each division manager within GE who has employees in the program regarding their status and progress.

From the company's perspective, the packaged learning experience provides what we call the 10-point advantage:

1. external testing, assessment, and academic advising
2. college study skills seminars
3. credit for prior college and work experience
4. utilization of company's tuition refund program
5. confidentiality
6. credentialing
7. accountability
8. low cost
9. convenient locations
10. resources of four colleges of the University of Cincinnati

The first, pilot year of the program with about 200 GE employees enrolled in the Manufacturing Engineering Technology Program, has been completed. Dr. Pat Sommerkamp, GE's liaison for this program, comments:

> This program provides students a grounding in the liberal arts and sciences and in technical skills to give them the ability to problem-solve when automated functions come together in the factory of the future. This is a unique problem area which has no past history on which to draw.

Although there occassionally are wrinkles to this innovative program that must be ironed out, a new program is now in place that can meet the future training needs of many are manufacturing companies as well as a packaged learning

experience that is beneficial to them. In April 1986, the College hosted a luncheon for representatives of 50 area manufacturing industries. At that time, the program was described to them and the packaged learning experience offered to them for the 1986-87 academic year. In addition, from among those representatives, a METP advisory committee was created. This committee will conduct a needs assessment to determine the scope, extent, and nature of regional industrial needs for the MET package and will work with the university to determine availability of additional laboratory space and equipment needed for the technical courses in the program. Of course, the program is open to any interested student or company, whether or not the employee opts for the packaged process.

The success of the contract agreement between General Electric and Raymond Walters College, like all good partnerships, is the result of the adaptability, creativity, and pragmatism of the leaders of both institutions who have collaborated to mesh company needs and college resources. The model itself cannot be transplanted to other institutions, but the principles behind it can be applied anywhere.

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Call for NCCSCE WORKING PAPERS

During each academic year, the NCCSCE will publish two *Working Papers* as inserts to the COMMUNITY SERVICES CATALYST. The purpose of the *Working Papers Series* is to issue publications to community services and continuing education professionals that provide for the dissemination of planning processes, innovation programs, administrative practices, and evaluation techniques.

The content of the *Working Papers* should emphasize contributions to the *practice* of community services and continuing education. Elements of the *Working Paper* may include program descriptions, management techniques, evaluation methods and tools, instructional materials, bibliographies, and planning and reporting processes and forms.

While the selection and review process is a continuing one, manuscripts to be considered for the Spring 1987 issue should be received not later than March 1, 1986. To maximize the likelihood that the manuscript will be published, prospective authors should submit a two-to three-page concept paper or call the editor prior to the full development of the proposed *Working Paper.* Prospective contributors are encouraged to contact the undersigned in the early stages of paper development.

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